



## Maryland Commission on Climate Change Scientific and Technical Working Group Meeting

### Summary of September 13, 2017 Meeting

**Meeting agenda and participants.** The meeting was held at the University System of Maryland Office, Adelphi, Maryland. The [agenda](#) was available on the Commission on Climate Change website. Members of the Scientific and Technical Working Group (STWG) present in person or participating by teleconference were Ghassem Asrar, Donald Boesch (Chair), Belay Demoz, Frederick Ducca for Gerrit Knaap, Amir Sapkota, Adel Shirmohammadi, David Vanko and Eric Wachsman. Also in attendance were Pat Harcourt (University of Maryland Center for Environmental Science), Jess Herpel (Maryland Department of the Environment) and Heidi Hawkins (Constellation Energy Company); Colleen Turner (Maryland Department of Transportation) joined the meeting via teleconference.

**Scope of the meeting and context of the Commission.** During 2017 the STWG focused on issues related to greenhouse gas emissions inventories, including projections of emissions that consider growth and development. The results of these deliberations were presented to the Maryland Commission on Climate Change (MCCC) in June and serve as the basis of recommendations made by the STWG for inclusion in the MCCC 2017 Annual Report. The September STWG meeting focused on organizing STWG efforts to address its recommendations concerning improved estimates of net greenhouse gas emissions from agriculture, forests and wetlands. The meeting also began to evaluate longer-term energy alternatives, not only to achieve Maryland's mandate of 40% reduction in greenhouse gas emissions by 2030, but also to continue rapid reductions in emissions over the following decades.

The STWG also reviewed and revised its recommendations for consideration by the MCCC for inclusion in the Commission's 2017 Annual Report and organized the drafting of sections concerning climate change science in that report. Chairman Boesch described the current context of Commission deliberations in which some Commissioners are urging more aggressive recommendations for reducing greenhouse gas emissions. Another backdrop is that the Federal Administration is considering or has proposed or implemented pull backs on policies and programs that address greenhouse gas reductions (such as the Clean Power Plan and CAFE standards), climate change adaptation, and scientific research and development.

**Maryland Energy Innovation Institute.** STWG member and Institute Director Eric Wachsman presented an overview of the new [Maryland Energy Innovation Institute](#) (MEI<sup>2</sup>), enabled by law during the 2017 General Assembly Session (SB 313). A [pdf](#) of his presentation without the animated builds is included on the MCCC website. The Institute is a collaboration between of the [University of Maryland Energy Research Center](#) (UMERC) at College Park that promotes research and education and the [Maryland Clean Energy Center](#), a corporate instrumentality of the State to advance clean energy and energy efficiency products, services and technologies for economic development. The Governor and General Assembly made a commitment of \$7.5 million over a five-year period to support the MEI<sup>2</sup>. Creation of the Institute will allow greater integration of energy research and education with policy innovation, and commercialization of clean energy

technologies in Maryland, including through seed grants, matching funds and operation of an incubator. The Institute's statutory responsibilities include collaboration with other academic institutions, governmental units, foundations, and industrial companies for clean energy research and innovation. This could extend the research of the UMERC research enterprise that has already been successful in receiving more competitive research awards from the U.S. Department of Energy's Advanced Research Projects Agency - Energy (ARPA-E) than any other university in areas such as energy efficiency and storage. Chairman Boesch indicated that he would request an opportunity for Dr. Wachsman to make a presentation on MEI<sup>2</sup> to the full MCCC.

**Longer-range energy alternatives to approach carbon neutrality.** Dr. Wachsman also presented some perspectives on meeting the challenge of eliminating net greenhouse gas emissions. The rapid growth in solar energy around the world and the reduction in its costs, making it cost-competitive with fossil carbon-derived energy, are impressive. Solar and wind energy will grow in regions of the U.S. where they are most abundant and economical independent of policies, but the rate of that growth is policy dependent. The use of natural gas as a transitional fossil fuel will continue to grow but will shift to smaller-scale, distributed Combined Heat and Power (CHP) Systems that provide a two-to-three times improvement in efficiency and greenhouse gas emissions reductions. Small modular nuclear reactors would be a game changer, but are strongly dependent on policy changes. Storage of energy produced by solar and wind deployment is a critical limiting technology and would enable greater penetration of vehicle electrification and displace very inefficient, peaking power generation requiring natural gas or coal. The United States government has had an inconsistent energy policy and has grossly underfunded energy research and development. Current federal funding in energy R&D is substantially less than it was in 1980. The Office of Management and Budget's budget blueprint for FY 2018 only worsens this, for example by eliminating ARPA-E and significantly reducing funding for science and energy efficiency and renewable energy in the Department of Energy.

**Contributions to the MCCC 2017 Annual Report.** The STWG discussed drafting of a well-documented narrative on developments in climate change science over the last year as a contribution to the MCCC 2017 Annual Report. It was decided to add a paragraph on the new MEI<sup>2</sup> and that members would provide comments and suggestions on the draft by September 22. A revised draft would be circulated. Recommendations from the STWG to be considered at the September 20 meeting of the MCCC were also discussed. Some additional recommendations were suggested, for example on health risks of climate change, but it was felt that these required further discussion by the STWG and consultation with other working groups. The recommendations advanced to the MCCC are as follows:

1. The Commission on Climate Change urges the Maryland Congressional delegation to place a high priority on ensuring that climate change science and research and development of energy technologies are adequately funded and implemented by the Federal government.
2. The Climate Action Plan required by the GGRA of 2016 should not only include actions to close the gap to achieve a 40 percent reduction in emissions, but should be based on longer-term strategies needed to achieve carbon neutrality over the decades subsequent to 2030.
3. Through the STWG, the Commission should identify critical uncertainties in and methods to improve the estimation of greenhouse emissions from forests, agriculture, wetlands and waterways.
4. Changes in greenhouse gas emissions associated with population growth and expanded land development should to be better taken into account in projecting growth in emissions that must be offset to achieve the GGRA goal.

5. The Commission on Climate Change encourages and supports collaborative efforts in forecasting future emissions in order to provide a more dynamic basis for evaluating public policy options that achieve the needed greenhouse gas emission reductions together with other social and economic objectives.

**Approaches to quantifying and reducing net GHG emission from landscapes.** STWG member Eric Davidson prepared a [presentation](#) on approaches to improve inventory estimates for net greenhouse gas emissions from forests, fields and wetlands that would help identify potential source reductions and increases in carbon sinks. He was unable to attend the meeting and Chairman Boesch made the presentation and led the discussion. The STWG found the overview useful for framing a more in-depth assessment under STWG auspices, one that would indicate the level of confidence in estimates and the best opportunities for reducing emissions and enhancing sequestration. Drs. Davidson and Boesch plan on pursuing funding to support the assessment from agency and philanthropic sources.

**Assessment of emissions from and climate change impacts on agriculture.** Because of the shortage of time, STWG member Adel Shirmohammadi was able to lead only an abbreviated discussion on this topic. Further STWG assessment is important not only for improving the emissions inventory and evaluating the scientifically realistic potential of carbon sequestration through the Healthy Soils initiative, but also for addressing the requirement for "assessing the impacts that climate change may have on agriculture in the state." Dr. Shirmohammadi indicated that there has been a downward trend in emissions from Maryland agriculture from 2003 to 2013 based on the U.S. Department of Agriculture's [Greenhouse Gas Inventory](#). He also summarized some relevant research within the University of Maryland College of Agriculture and Natural Resources. After discussion it was agreed that Drs. Boesch and Davidson would meet with Dr. Shimohammadi and Dean Craig Beyrouthy to discuss how to best proceed with assessments of net GHG emissions from landscapes and the assessment of impacts on agriculture for which the MCCC is charged.

**Transitioning and Scheduling.** Chairman Boesch reminded the STWG that he was stepping down as President of the University of Maryland Center for Environmental Science on September 18, 2018 and that the new President, Dr. Peter Goodwin, would become the Commissioner as designated in the Maryland Commission on Climate Change Act. Dr. Boesch and Goodwin were scheduled to meet with Commission Chair Ben Grumbles to discuss the transition, including who would serve as STWG chair. It is likely that Dr. Boesch would continue to serve as the designated Commissioner, Steering Committee member and STWG chair through 2017 in order to complete the 2017 Annual Report. With that in mind, he indicated that he would schedule a December 2017 meeting of the STWG that would focus on the organization and tasks for the STWG during 2018.

**Public comments.** None were offered.